

Application # 10/824,900

REMARKS

Currently claims 1-29 are pending in the application. Claims 1-29 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Crossman et al (Crossman) in view of Van Horn. For the reasons stated below, claims 1-29 are not obvious by Crossman in view of Van Horn under 35 U.S.C. 103 (a). Applicants respectfully request reconsideration and further examination of claims 1-29.

Art Rejections

35 U.S.C. 103 (a)

Claims 1-29 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Crossman et al (Crossman) in view of Van Horn. To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all claim limitations" [MPEP 2142]. Further, MPEP 2111.02 states, "Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation." Because the claim element of the "lug cap face" is defined as "said lug cap face is a portion of the lug cap which covers said slot wall portion", the structure of the "lug cap face" is limited by the structure of the "slot wall portion." Therefore, claims 1-29 contain the limitation "slots having two generally radially extending wall portions, wherein said wall portions have a top, a bottom, and opposing sides, and a bottom surface extending between and interconnecting said wall portion bottoms." The Examiner states that Crossman shows slots 24 "having two generally radially extending wall portions, wherein said wall portions have a top, a bottom, and opposing sides, and a bottom surface extending between and interconnecting said wall portion bottoms." However, Applicant can find no such wall portions in Crossman. In column 1, lines 21-23, Crossman states, "The invention also allows a generous half moon shape contour in the material thereby eliminating sharp notch corners and stress concentration points." Column 2, line 63-65 states "carbon disc 22 which is provided with *uniformly curved notches 24.*" Thus

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the slots 24 have no defined sides, walls, or "bottom surface extending between and interconnecting said wall portion bottoms." Applicants therefore respectfully request the Examiner show where Crossman et al disclose the limitations of "slots having two generally radially extending wall portions, wherein said wall portions have a top, a bottom, and opposing sides, and a bottom surface extending between and interconnecting said wall portion bottoms." In the absence of this, applicants submit that no *prima facie* case of obviousness has been established, and request the rejections against claims 1-29 on this ground be withdrawn.

Claims 1-29 further contain the limitation, "a lug cap having a lug cap face, wherein said lug cap covers one of said slot wall portions and extends circumferentially away from said slot on said slot wall top and said slot wall opposing sides." As discussed above, Crossman does not disclose a slot wall, and as the Examiner points out, Crossman does not disclose a lug cap face. Looking then to Van horn, what is disclosed is not a lug cap, as it does not "cap" anything. What is disclosed is a "torque link 12" (column 2, line 24). This does not "extend circumferentially away from said slot on said slot wall top" as is required by claims 1-29. Further, Crossman does not disclose a lug cap, but discloses a "key slot segment" (also referred to as 'key drive segment' and 'drive slot segment'), the important aspect, as shown by the name, being that it covers/creates the slot. It is not just a cap which covers the lug. Because of this, as the specification in Crossman goes into great detail explaining, many precautions are taken to overcome the problems this presents due to the differential in thermal expansion of the key slot segment vs. the brake material. For instance, in column 3, lines 52-56, Crossman states, that the diameters of the holes in the key slot segments, as well as the holes in the disc must be "sufficient to compensate for uneven thermal expansion between" the discs and the key slot segments. Further, in column 4, lines 8-13, Crossman states "One feature of the invention resides in providing sufficient clearance to allow for the different heat expansion of the metal and carbon elements and the assurance of

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proper alignment of each of the holes to achieve uniform stress loading at all of the fastening points." Crossman even goes as far as to provide an alternative embodiment to try and overcome this drawback of the thermal expansion problem, Fig 18 and 19 as described in column 6, line 58 thru column 7 line 5.

In Figure 13 and 14 of Crossman, where the key slot segment does not cover the slot itself, Crossman points out "It is important in this embodiment of the invention, however, that each segment 58 actually extend between two adjacent notches 60 so that each and of the segment actually defines one side of each of the adjacent notches 60, rather than defining the full drive notch as in the above defined embodiments of the invention. However, the fact that the segment 58 does extend between adjacent drive notches, means that it does provide enough supporting surface with the rivets 62 that equal torque transfer is accomplished for the entire disc 50." Thus Crossman teaches away from a lug cap which only covers a portion of the lug, and does not cover the slot.

In Van Horn, the torque link also creates the drive slot. These methods are much more complicated and expensive.

Applicant respectfully request the Examiner specify where Crossman or Van Horn discloses a "lug cap having a lug cap face, wherein said lug cap covers one of said slot wall portions and extends circumferentially away from said slot on said slot wall top and said slot wall opposing sides." In the absence of such, applicants submit that no *prima facie* case of obviousness has been established, and request the rejections against claims 1-29 on this ground be withdrawn.

Examiner has further stated that Krause et al and Bok et al both show lug caps. Applicants respectfully submit that this is not the case. Krause et al shows a brake disc in detail, but does not disclose any protective lug caps. Bok et al shows the same type of torque links as described in Van Horn.

Further, applicants submit that there is no motivation to combine the key slot segments of Crossman, which are a way to convert a half-moon slot into a functioning drive slot, with the torque-links of Van Horn, which is an apparatus for connecting individual brake segments to make a full brake disc. Even in the

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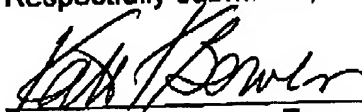
embodiment shown in Crossman for a segmented disc, the key slot segments are not for structurally connecting the brake segments, but rather are there just to protect the slots.

Claims 2, 11, and 21 contain the limitation "said lug cap extends circumferentially away from said slot approximately one half of the distance to an adjacent slot." As mentioned above, in the only instance that Crossman discusses of the key slot segments not covering/creating the slots, it noted that it was "important in this embodiment of the invention, however, that each segment 58 actually extend between two adjacent notches 80", thus teaching away from extending approximately one half of the distance to an adjacent slot. Further, in Van Horn, the torque links are not there for protection of the lugs, but are rather there to form the slot in which the torque driver would go. Thus there would be no motivation to extend this any further than is necessary for this purpose. Thus applicant submits that not only is there no motivation provided in the references to extend the lug cap circumferentially away from the slot approximately one half of the distance to an adjacent slot, but in fact, Crossman actually teaches against it. Therefore, in the absence of this, applicants submit that no *prima facie* case of obviousness has been established, and request the rejections against claims 2, 11, and 21 on this ground be withdrawn.

Conclusion

Applicants respectfully submit that claims 1-29 are allowable as written, and request that the rejections against them be withdrawn.

Respectfully submitted,



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